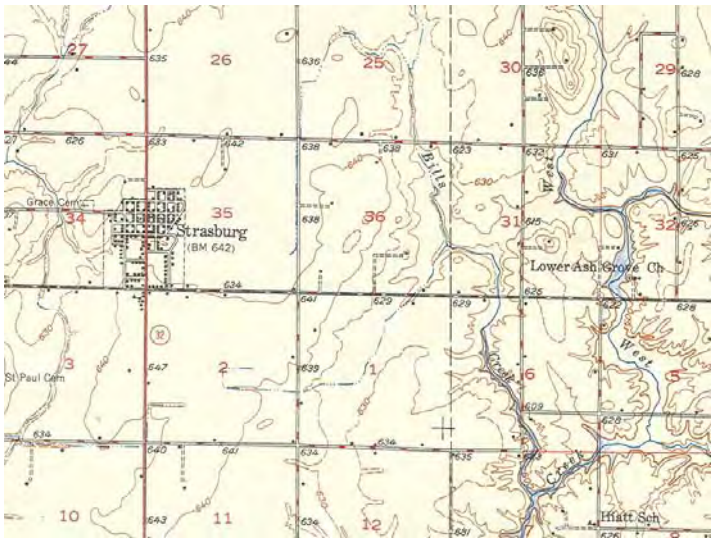
Midwest Technology Assistance Center
Groundwater Resource Assessment for Small Communities

Groundwater Availability
At
Strasburg, Illinois
(Shelby County)

Project Overview
This project is an outgrowth of the Public Service Program of the Center for Groundwater Science (CGS) at the Illinois State Water Survey. For over 50 years, the CGS has provided groundwater information to any requesting individual, commercial facility or public water facility. Groundwater resource assessments have been an integral part of this public service and have been undertaken for thousands of individuals and facilities throughout its history. Community groundwater supplies that have been identified as potentially "deficient" are the targets for this project. The criterion used for determining community deficiency were; 1) Water Supply and Demand (operating time), 2) Aquifer Limitation, 3) Well Specific Capacity, and 4) Facility History. The Village of Strasburg has been identified as a target community for groundwater assessment through this project.

Project Goal
To provide a resource tool of pertinent groundwater information to each target facility. This document describes a summary of historic information, current conditions and the potential for expansion of the water supply within 5 and 10 miles of Strasburg.

Strasburg (Shelby County)



The Village of Strasburg (Facility Number 1730450) utilizes two active community water supply wells. Well Nos. 3 and 101 (Illinois EPA Nos. 01375 and 00923, respectively) supply an average of 55,000 gallons per day (gpd) to 274 services or a population of 643.

The project criterion ranked Strasburg as “marginal” mainly due to its shallow water table wells and a history of highly variable sand formations found throughout this area.

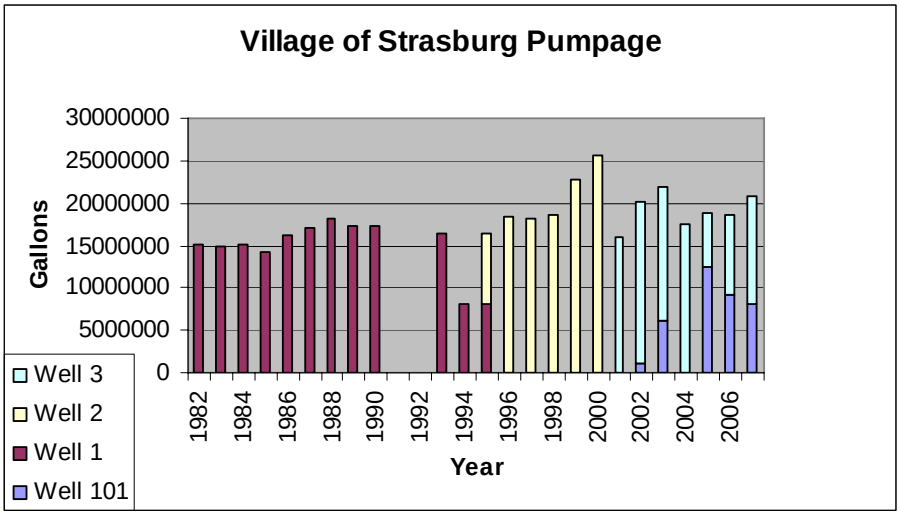
Historic Information

Background Well Information

Well No. 3
Finished in sand and gravel deposits located in the Section 19, T.10N., R.06E., Shelby County. The well was drilled to a depth of 57 feet in 2000 and, upon completion, was pumped at between 130.1 and 151 gallons per minute (gpm) for 8 hours with approximately 25 feet of drawdown. Calculated specific capacity from this test was 5.2 gpm/ft. Static water level was reported as 15 feet below land surface.

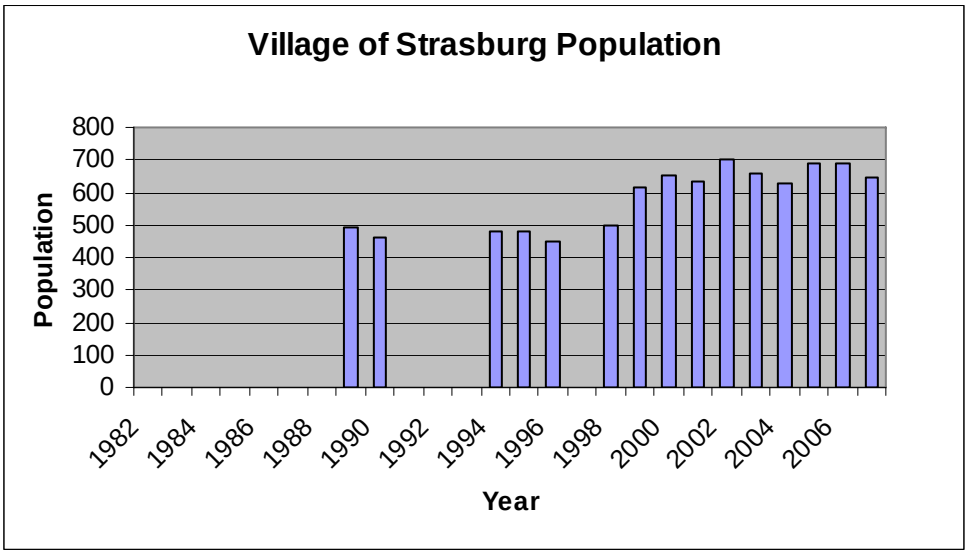
Well No. 101
Finished in sand and gravel deposits located in the Section 19, T.10N., R.06E., Shelby County. The well was drilled to a depth of 50 feet in 1995 and, upon completion, was pumped at an average rate of 76.5 gpm for 3 hours. Calculated specific capacity from this test was 7.4 gpm/ft. Static water level was reported as 6.10 feet below the top of well casing.

Background Pumpage Information



Source: ISWS Illinois Water Inventory Program

Historic Population Information



Source: ISWS Illinois Water Inventory Program

Regional Information

Resources within 5 miles of Strasburg (Figure 1).

Domestic Groundwater Supplies
The available regional data indicate that groundwater for domestic and farm use in this area is obtained mainly from large-diameter dug and bored wells finished in the unconsolidated materials above bedrock. These wells tap stringers or lenses of silt, sand, or gravel and can be only a few inches to a few feet thick contained in the unconsolidated materials above bedrock. They range in depth from about 30 to 60 feet. The yield of this type of well is limited to a few hundred gallons per day and may be only barely adequate for normal household uses. There are some wells drilled into bedrock. These wells range in depth from 100 to 150 feet and may be only adequate for normal household use.

Several large-diameter wells have reportedly been drilled to depths of around 60 feet below land surface in the northern portion of T.11N, R05E. These wells generally are finished in sand and gravel approximately 60 feet in depth. These deposits may be worth investigation as a possible source of sustainable water resources for the village.

Municipal Groundwater Supplies
There are no towns or villages located within five miles of Strasburg.

Resources within 10 miles of Strasburg (Figure 2).

Municipal Groundwater Supplies
Towns within 5 to 10 miles of Strasburg include: Neoga in Cumberland County and Windsor, Shelbyville, Stewardson and Mode all in Shelby County.

The Village of Mode reports no water for their town through the use of municipal wells. It is assumed that the residents' water needs at the village are fulfilled through domestic private wells.

The Village of Stewardson currently uses two wells (Nos. 1 and 3) located in Sections 35, in T.10N., R.05E., Shelby County. Well No. 1 is finished in sand and gravel at a depth of 50 feet with a capacity about 128 gallons per minute (gpm). Well Nos. 3 is finished in sand and gravel deposits at a depth of 52 feet, and is rated at 128 gpm.

The Village of Windsor obtains its water from three active community water supply wells. Well No. 8 is finished at 100 feet is pumped at 35 gpm.. Well No. 9 is finished in sand and gravel deposits at a depth of 100 feet and is pumped at 55 gpm. Wells 8 and 9 are located in Section12, T.11N, R.05E, Shelby County. Well No. 10, pumps at 80 gpm and was drilled to 141 feet deep, and is located in Section 33, T.12N., R. 05E., Shelby County.

The Village of Shelbyville obtains its water from eight active community water supply wells (Nos. 1, 2, 3, 4, 5, 6, 8 and 9). These wells are finished in sand and gravel deposits at depths ranging from 54 to 63 feet below land surface, respectively. All wells have an actual pumping capacity of 275gpm. The village operates two separate well fields, the north and south well fields. The north field wells (well nos. 1, 2, 3, 8 and 9) are located in Section 26, T.11N., R.03E., Shelby County. The south field wells (well nos. 4, 5 and 6) are located in Section 35, T.11N., R.03E., Shelby County.

The Village of Neoga obtains its water from Lake Mattoon via surface water pumping.

Figures 3 and 4 illustrate the ISWS Potential Yield maps for sand and gravel and bedrock aquifer in Illinois, respectively. The pertinent counties for Strasburg are highlighted. Figure 3 indicates that sand and gravel deposits are limited and variable throughout most of the Strasburg area. The bedrock map (Figure 4) indicates poor availability of groundwater from the bedrock throughout the area.

Figures 5 and 6 present the probability of occurrence of the sand and gravel and the water-yielding character of the shallow bedrock for the Strasburg area as depicted in the Illinois State Geologic Survey Circular 225, *Groundwater Geology in South-Central Illinois* (Selkregg, et al., 1957). Figure 5 indicates "Fair to Good" variability in the county for sand and gravel deposit development. Figure 6

indicates only small supplies are available from the shallow bedrock units. The domestic well construction records verify these map outlooks.

Groundwater Availability Summary

The available regional information from the surrounding towns indicates that, although there are adequate sand and gravel deposits for municipal well development throughout this area, they are not large, high-yielding type aquifer systems. Exploration by these towns within their local areas has been successful in finding good, reliable groundwater supplies. To this end, additional testing further from the existing Strasburg wells and also along the Little Wabash River, should find suitable sites for testing and development. Test drilling and aquifer testing would be needed. Rural water companies are also beginning to move into the county which could also be entertained as a source of water for the village. Lincoln Prairie Water Company has recently drilled two wells and purchases water from the City of Shelbyville. It is unknown exactly where their connection is and the coverage area of the Water District, but the prospect of constructing a water main to the Village of Strasburg could be explored for future village water needs.

Figure 1. 5-mile radius map-Strasburg

Figure 2. 10-mile radius map-Strasburg

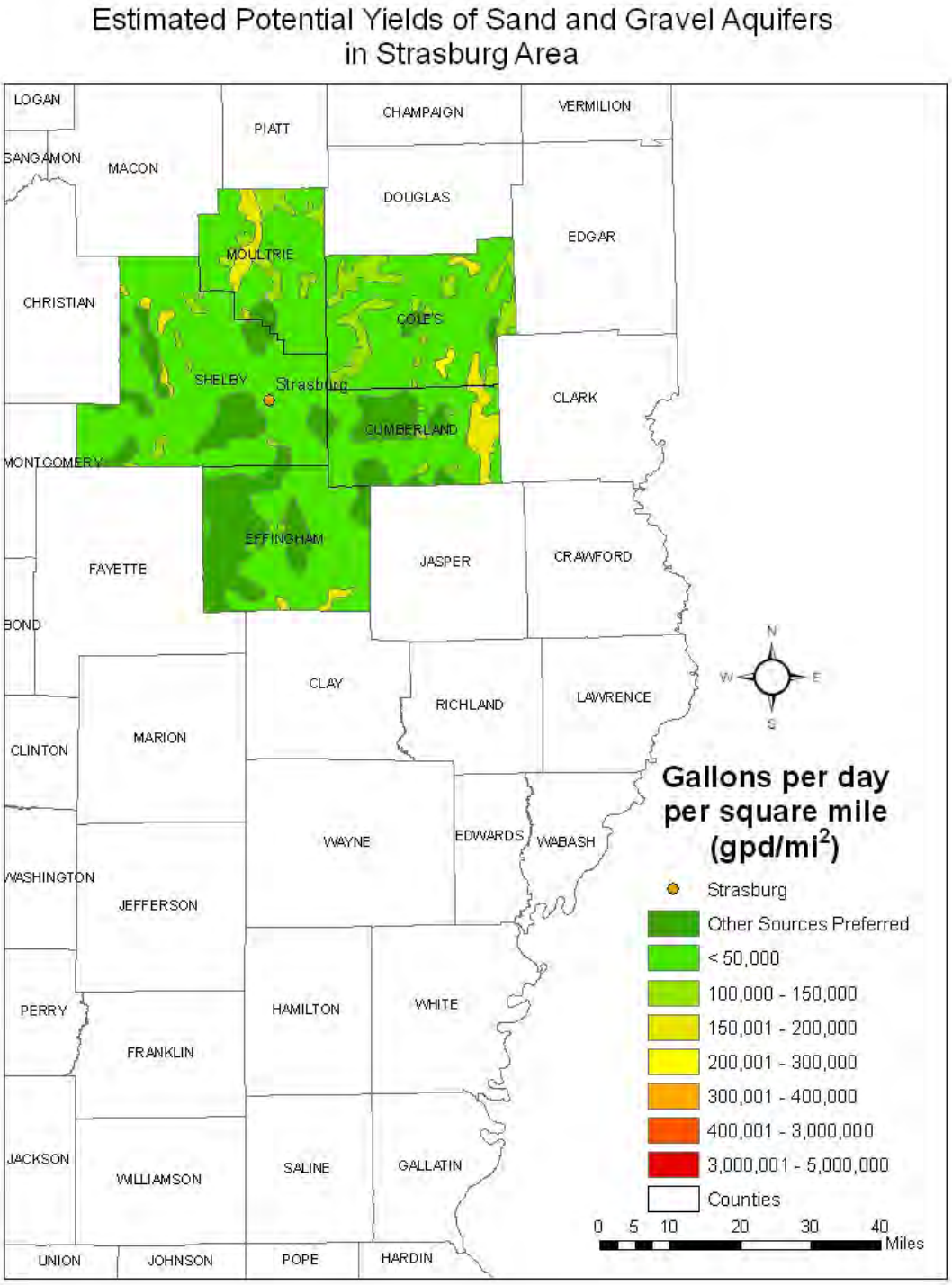

Estimated Potential Yields of Sand and Gravel Aquifers
in Strasburg Area
LOGAN
PIATT
CHAMPAIGN
VERMILION
SANGAMON
MACON
DOUGLAS
EDGAR
MOULTRIE
CHRISTIAN
COLES
SHELBY
Strasburg
CLARK
CUMBERLAND
MONTGOMERY
EFFINGHAM
FAYETTE
JASPER
CRAWFORD
BOND
CLAY
RICHLAND
LAWRENCE
CLINTON
MARION
WAYNE
EDWARDS
WABASH
WASHINGTON
JEFFERSON
PERRY
HAMILTON
WHITE
FRANKLIN
JACKSON
WILLIAMSON
SALINE
GALLATIN
UNION
JOHNSON
POPE
HARDIN
N
W
E
S
Gallons per day
per square mile
(gpd/mi2)
Strasburg
Other Sources Preferred
< 50,000
100,000 - 150,000
150,001 - 200,000
200,001 - 300,000
300,001 - 400,000
400,001 - 3,000,000
3,000,001 - 5,000,000
Counties
0 5 10 20 30 40
Miles

Figure 3.

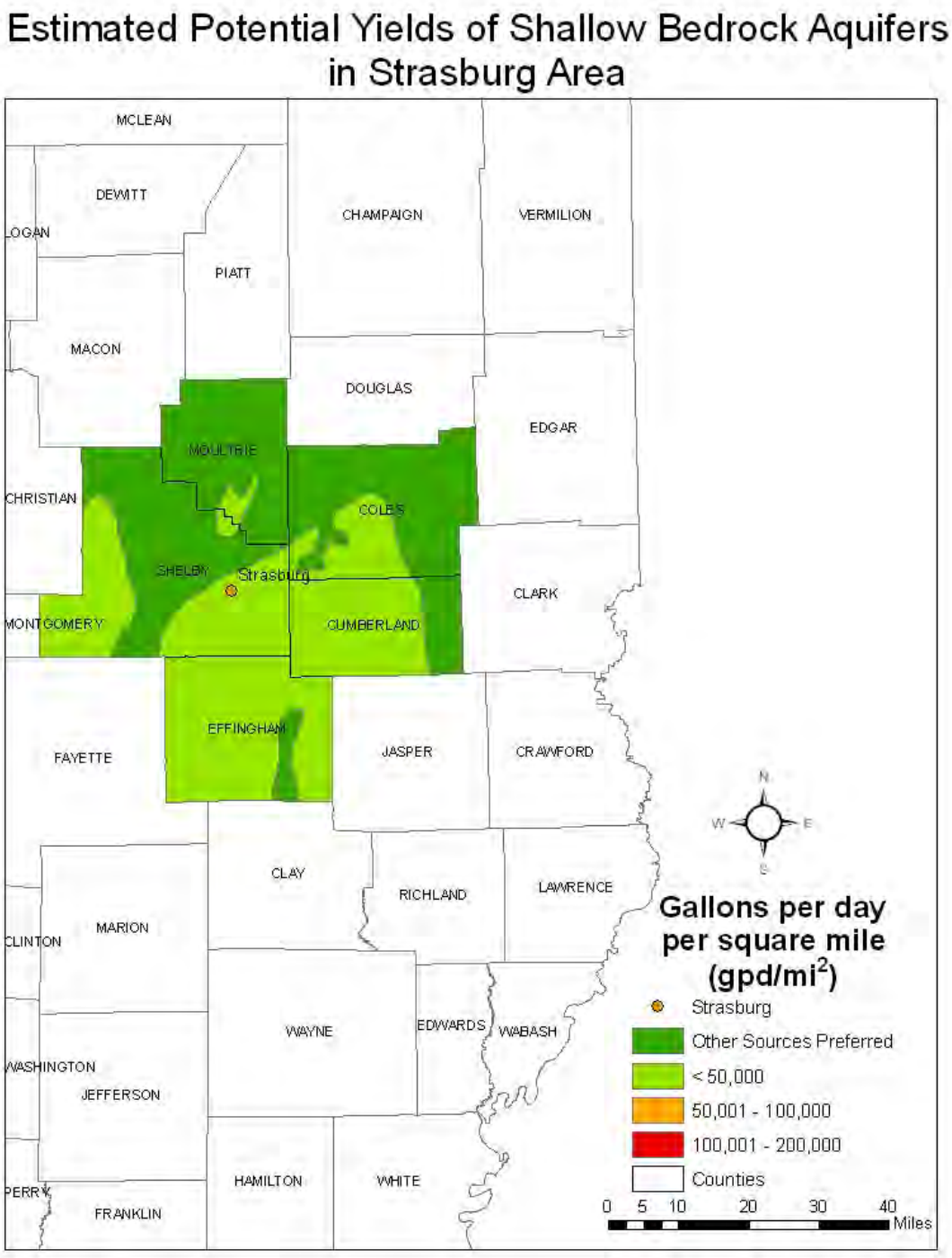

Estimated Potential Yields of Shallow Bedrock Aquifers in Strasburg Area
MCLEAN
DEWITT
LOGAN
PIATT
CHAMPAIGN
VERMILION
MACON
DOUGLAS
EDGAR
MOULTRIE
CHRISTIAN
COLES
SHELBY
Strasburg
CLARK
MONTGOMERY
CUMBERLAND
EFFINGHAM
FAYETTE
JASPER
CRAWFORD
CLAY
RICHLAND
LAWRENCE
MARION
CLINTON
WAYNE
EDWARDS
WABASH
WASHINGTON
JEFFERSON
HAMILTON
WHITE
PERRY
FRANKLIN
N
W
E
S
Gallons per day per square mile (gpd/mi2)
Strasburg
Other Sources Preferred
< 50,000
50,001 - 100,000
100,001 - 200,000
Counties
0 5 10 20 30 40
Miles

Figure 4.

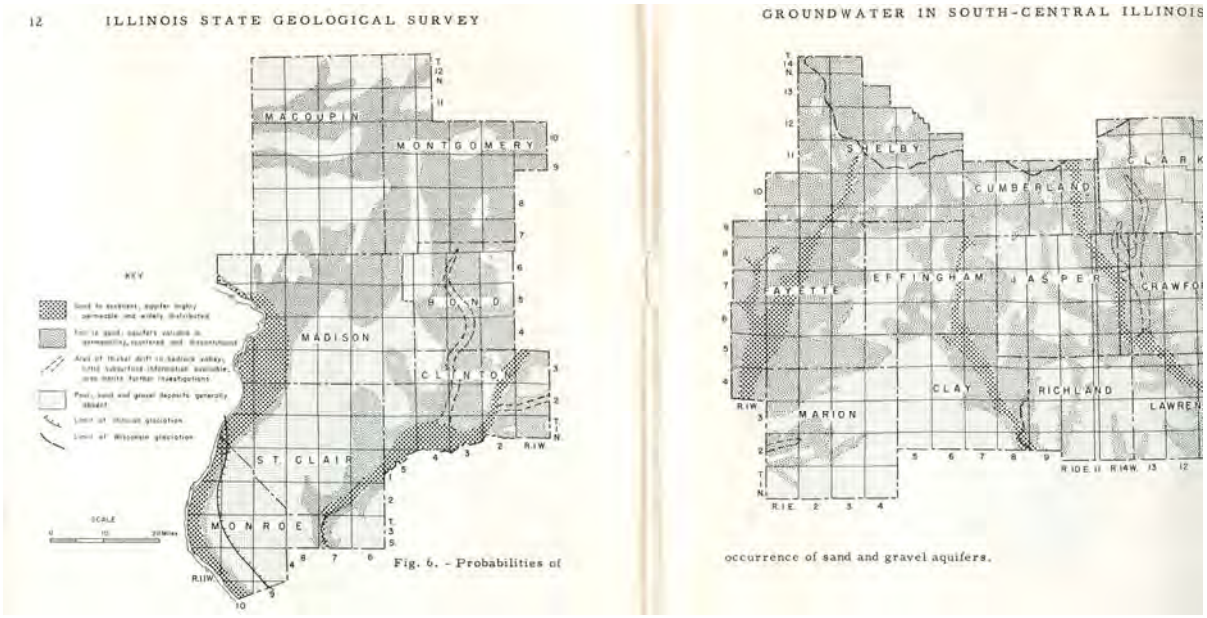


Figure 5.

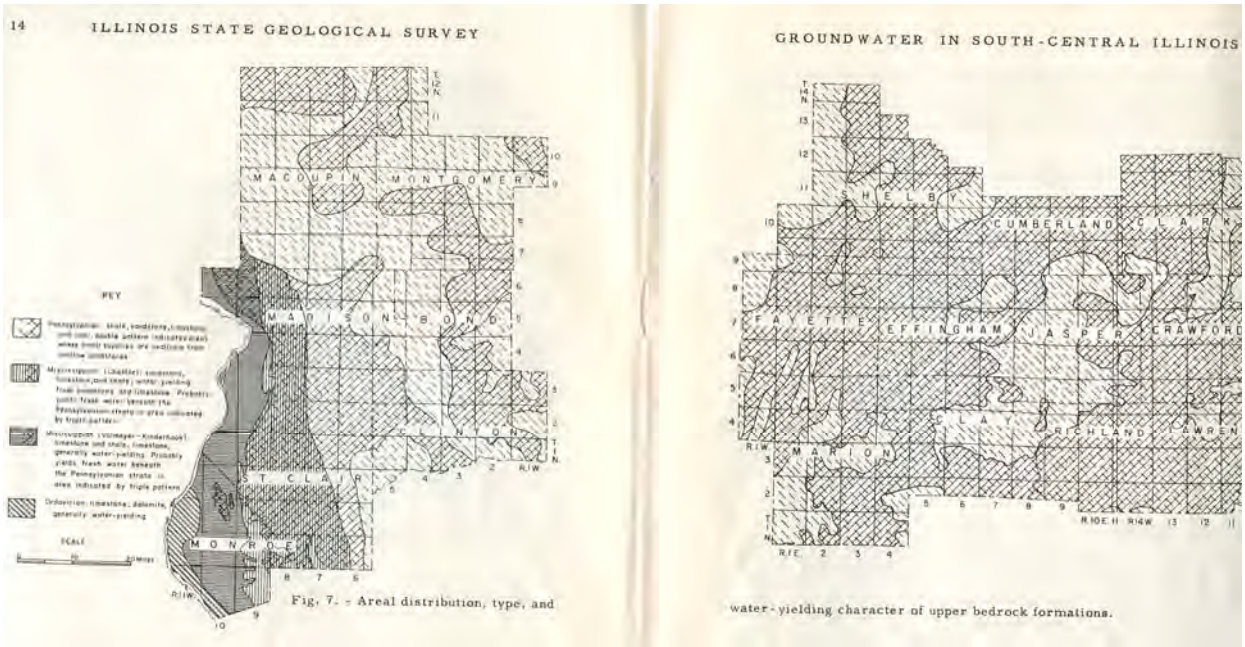


Figure 6.

References

Selkregg, L.F., W.A. Pryor and J. Kempton. 1957. Groundwater Geology In South-Central Illinois, A preliminary Geologic Report. Illinois State Geological Survey Circular 225.

ISWS publications list for the Sidell and surrounding areas.

* = Publication is out of print.
$ = Payment required.

COLES

*1965	RI-53	Potential yield of aquifers in Embarras River Basin, Illinois. Walton-Csallany. Open File Report.
1965	RS-48	Relationship between water use and population in the Embarras River Basin, Illinois. Csallany.
*1966	RI-55	Yields of wells in Pennsylvanian and Mississippian rocks in Illinois. Csallany. 42p.
*1969	RI-62	Groundwater resources of the buried Mahomet Bedrock Valley. Visocky-Schicht. 52p.
1972	RI-70	Plans for meeting water requirements in the Kaskaskia River Basin, 1970-2020. Singh-Visocky-Lonnquist. 24p.
*1980	CR-237	Assessment of eighteen public groundwater supplies in Illinois. Wehrmann-Visocky-Burris-Ringler-Brower. 185p.
1982	COOP-8	Hydrogeologic evaluation of sand and gravel aquifers for municipal groundwater supplies in East-Central Illinois. Kempton-Morse-Visocky. 59p.

CUMBERLAND

*1965	RI-53	Potential yield of aquifers in Embarras River Basin, Illinois. Walton-Csallany. Open File Report.

EFFINGHAM

*1965	RI-53	Potential yield of aquifers in Embarras River Basin, Illinois. Walton-Csallany. Open File Report.

*1966 RI-55 Yields of wells in Pennsylvanian and Mississippian rocks in Illinois. Csallany. 42p.

1972 RI-70 Plans for meeting water requirements in the Kaskaskia River Basin, 1970-2020. Singh-Visocky-Lonnquist. 24p.

*1978 CR-209 Assessment of public groundwater supplies in Illinois. Visocky-Wehrmann- Kim-Ringler. 193p.

*1980 CR-237 Assessment of eighteen public groundwater supplies in Illinois. Wehrmann-Visocky-Burris-Ringler-Brower. 185p.

1992 COOP-14 Pilot Study: Agricultural chemicals in rural, private wells in Illinois. Schock-Mehnert-Caughey-Dreher-Dey-Wilson-Ray-Chou-Valkenburg-Gosar-Karny-Barnhardt-Black-Brown-Garcia. 84p.

1992 COOP-15 Characterization of the study areas for the Pilot Study: Agricultural chemicals in rural, private wells in Illinois. Barnhardt-Mehnert-Ray-Schock. 114p.

MOULTRIE

*1966 RI-55 Yields of wells in Pennsylvanian and Mississippian rocks in Illinois. Csallany. 42p.

*1969 RI-62 Groundwater resources of the buried Mahomet Bedrock Valley. Visocky-Schicht. 52p.

1972 RI-70 Plans for meeting water requirements in the Kaskaskia River Basin, 1970-2020. Singh-Visocky-Lonnquist. 24p.

*1978 CR-209 Assessment of public groundwater supplies in Illinois. Visocky-Wehrmann- Kim-Ringler. 193p.

1982 COOP-8 Hydrogeologic evaluation of sand and gravel aquifers for municipal groundwater supplies in east-central Illinois. Kempton-Morse-Visocky. 59p.

SHELBY

*1966 RI-55 Yields of wells in Pennsylvanian and Mississippian rocks in Illinois. Csallany. 42p.

1967 C-92 Groundwater availability in Shelby County, Illinois. Sanderson. 37p.

1997	CR611	Delination of Time-Related Recharge Areas for the City of Shelbyville Well Fields. Anliker-Roadcap. 69p.
1972	RI-70	Plans for meeting water requirements in the Kaskaskia River Basin, 1970-2020. Singh-Visocky-Lonnquist. 24p.
*1978	CR-209	Assessment of public groundwater supplies in Illinois. Visocky-Wehrmann-Kim- Ringler. 193p.
1982	COOP-8	Hydrogeologic evaluation of sand and gravel aquifers for municipal groundwater supplies in east-central Illinois. Kempton-Morse-Visocky. 59p.
*1982	CR-299	A summary of information related to the comprehensive management of groundwater and surface water resources in the Sangamon River Basin, Illinois. O'Hearn-Williams. 145p.
1997	CR-611	Delineation of time-related recharge areas for the city of Shelbyville well fields. Anliker-Roadcap. 69p.